# Overview and Demo of CMCS Premixed Turbulent Flames Portlet

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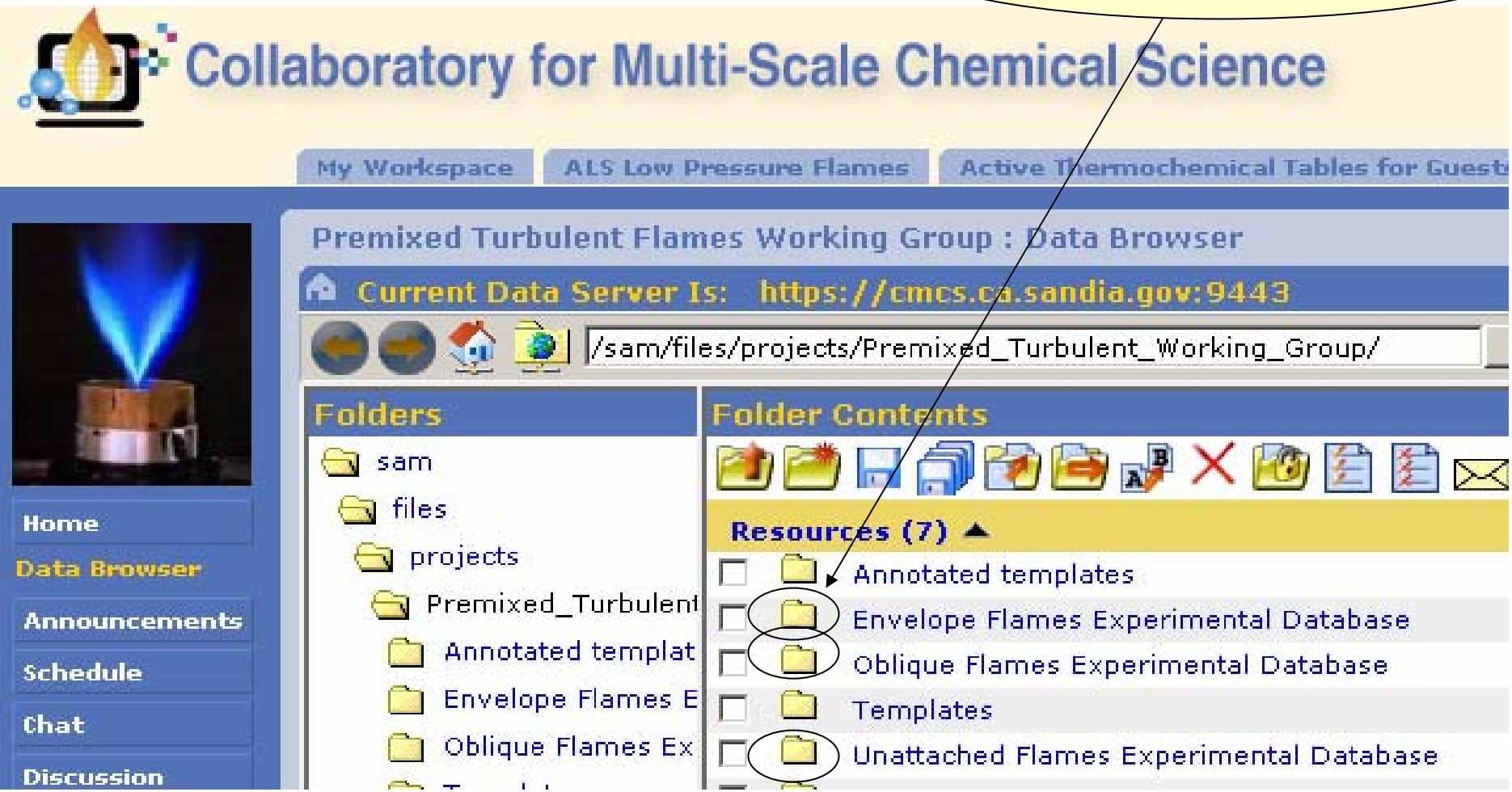
10th International Workshop on Premixed Turbulent Flames

Mainz, Germany

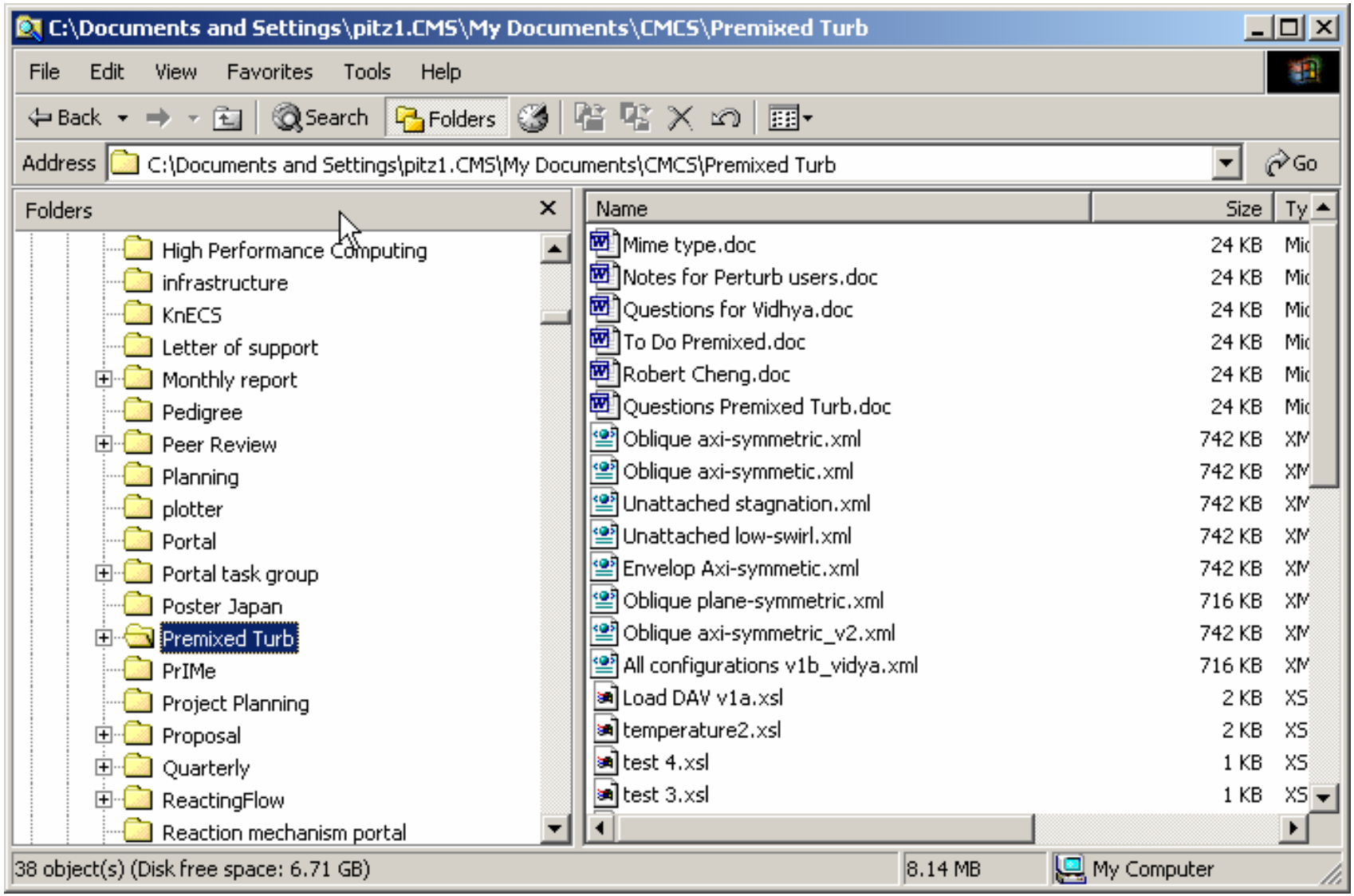
12-13 August 2006

# CMCS has created a portlet for your working group

Folders for 3 flame types



# MS Explorer® on a PC



# Excel® worksheet from which metadata is extracted

| Experimental Conditions | <U> |
|---|---|
| **Inlet Flow** | |
| mean flow velocity <U> (m/s) | 3 |
| rms velocity u' (m/s) | 0.21 |
| Turbulent Reynolds number | 40.00 |
| longitudinal integral length scale, lx (m) | 0.0035 |
| **Combustion** | |
| fuel (use chemical symbols all capital letters e.g. CH4 C2H4 etc) | CH4 |
| oxidizer | air |
| Φ | 0.70 |
| other combustion parameters (e.g. dilution) | |
| **Ambient** | |
| inlet pressure (pa) use 101325 for atmospheric | 101325 |
| inlet temperature (K) | 298 |
| open or enclosed | open |
| **Regime Diagram Parameters at inlet** | |
| u'/Sl (rms velocity over laminar flame speed) | 1.07 |
| lx/dl (longitudinal integral length scale over laminar flame thermal thickness) | 44 |
| Damkholer number Da based on laminar flame thermal thickness | 33.7 |
| Karlovitz number Ka based on laminar flame thermal thickness | 0.17 |
| URL to retrieve Table of experimental conditions | |

# The metadata extraction is done by converting the Excel® file to XML:

Excel®:

XML:

| | A | B |
|---|---|---|
| 2 | **Flame Type** | **Oblique-flames (axi symmetric)** |
| 3 | **Name of Data Guardian** | **Robert Cheng** |
| 4 | **E-mail of Data Guardian** | RKCheng@lbl.gov |
| 5 | **URL to retrieve data** | http://eetd.lbl.gov/aet/combustion/cmcs/Data_Retrieval.html |
| 6 | **Data Source (Paper Citation)** | 1. Shepherd, I.G. and R.K. |
| 7 | **Short Description** | There are four flames in this set named SWF26-29 in these papers |
| 8 | **Experimental Conditions** | separate multi-entry by comma e.g. 5,6.35,10.0 for <U> |
| 9 | **Inlet Flow** | |
| 10 | mean flow velocity <U> (m/s) | 2.5,5.0,7.5,10.0 |
| 11 | rms velocity u' (m/s) | 0.5,1.22,1.9,2.2 |
| 12 | Turbulent Reynolds number | 481,117,318,272,115 |
| 13 | longitudinal integral length scale, lx (m) | 0.015 |

```
<?xml version="1.0"?>
<workbook>
    <worksheet name="Sheet1">
        <row number="0">
            <col number="0">Important note: search algorithm is case sensitive.
Please be consistent by using Y,N, C2H4, CH4, OH-PLIF etc in your entries</col>
        </row>
        <row number="1">
            <col number="0">Flame Type</col>
            <col number="1">Oblique-flames (plane-symmetric)</col>
        </row>
        <row number="2">
            <col number="0">Name of Data Guardian</col>
            <col number="1">Robert Cheng</col>
```

# The metadata is extracted from the XML

## XML:

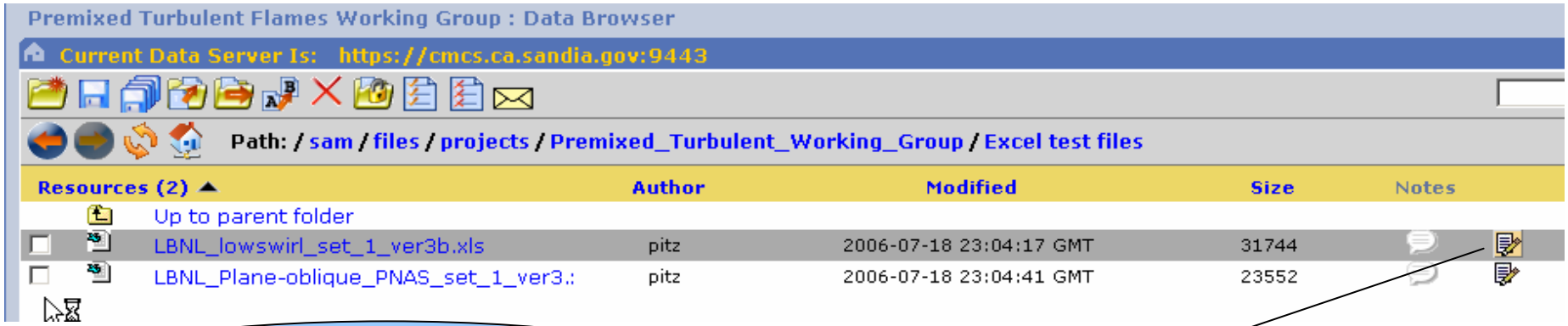
```
<?xml version="1.0"?>
<workbook>
    <worksheet name="Sheet1">
        <row number="0">
            <col number="0">Important note: search algorithm is case sensitive.
Please be consistent by using Y,N, C2H4, CH4, OH-PLIF etc in your entries</col>
        </row>
        <row number="1">
            <col number="0">Flame Type</col>
            <col number="1">Oblique-flames (plane-symmetric)</col>
        </row>
        <row number="2">
            <col number="0">Name of Data Guardian</col>
            <col number="1">Robert Cheng</col>
```

(XSLT Translator)

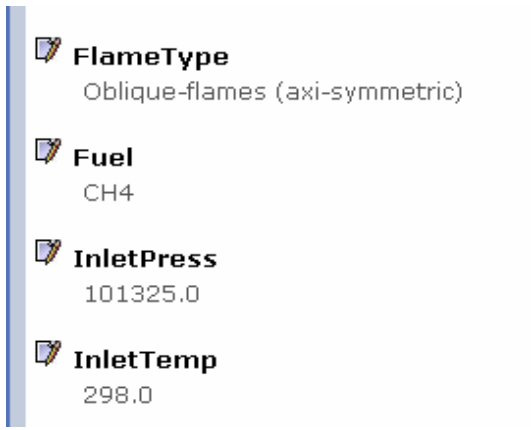
## Metadata extracted:

```
<?xml version="1.0" encoding="UTF-8"?>
<DAV:prop xmlns:DAV="DAV" xmlns:dc="http://purl.org/dc/elements/1.1/">
        <FlameType xmlns="http://purl.oclc.org/NET/preturb/">Oblique-flames (plane-symmetric)</FlameType>
        <E-mail xmlns="http://purl.oclc.org/NET/preturb/">Robert Cheng</E-mail>
</DAV:prop>
```

# XSLT translator automatically extracts the metadata into the CMCS data storage:

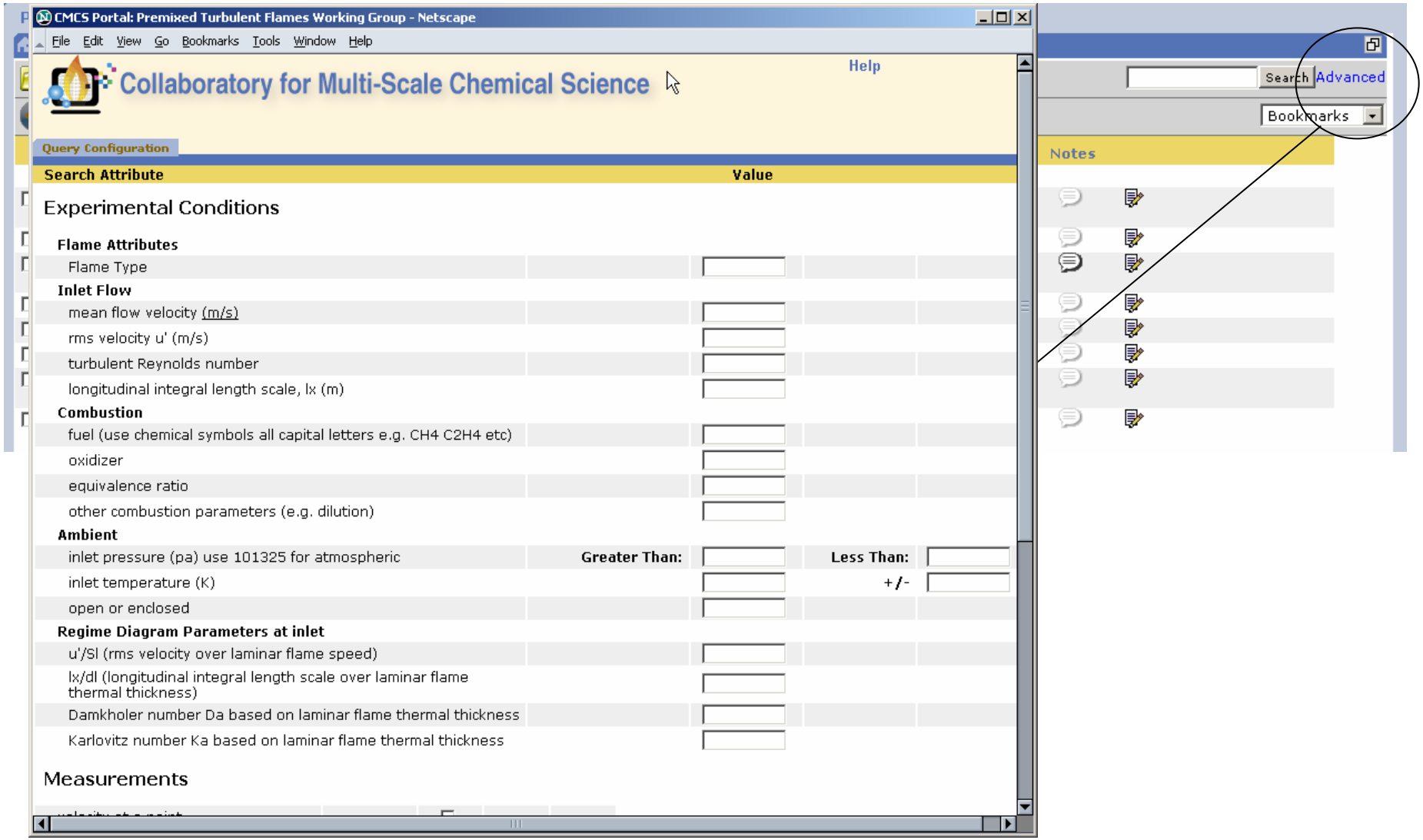



List of metadata stored:




XSLT translator can be modified by group.

# User can used advance search form to search for spreadsheets:



**Flame Attributes**

| | | | | |
|---|---|---|---|---|
| Flame Type | | oblique | | |

**Inlet Flow**

| | | | | |
|---|---|---|---|---|
| mean flow velocity (m/s) | | | | |
| rms velocity u' (m/s) | | | | |
| turbulent Reynolds number | | | | |
| longitudinal integral length scale, lx (m) | | | | |

**Combustion**

| | | | | |
|---|---|---|---|---|
| fuel (use chemical symbols all capital letters e.g. CH4 C2H4 etc) | | | | |
| oxidizer | | | | |
| equivalence ratio | | | | |
| other combustion parameters (e.g. dilution) | | | | |

**Ambient**

| | | | | |
|---|---|---|---|---|
| inlet pressure (pa) use 101325 for atmospheric | **Greater Than:** | | **Less Than:** | |
| inlet temperature (K) | | | +/- | |
| open or enclosed | | | | |

**Regime Diagram Parameters at inlet**

| | | | | |
|---|---|---|---|---|
| u'/Sl (rms velocity over laminar flame speed) | | | | |
| lx/dl (longitudinal integral length scale over laminar flame thermal thickness) | | | | |
| Damkholer number Da based on laminar flame thermal thickness | | | | |
| Karlovitz number Ka based on laminar flame thermal thickness | | | | |

## Measurements

| | |
|---|---|
| velocity at a point | ☐ |
| velocity at a plane | ☐ |
| scalar at a point or multi points | ☐ |
| scalar on a plane or multi-planes | ☐ |

Ana

flan
qua
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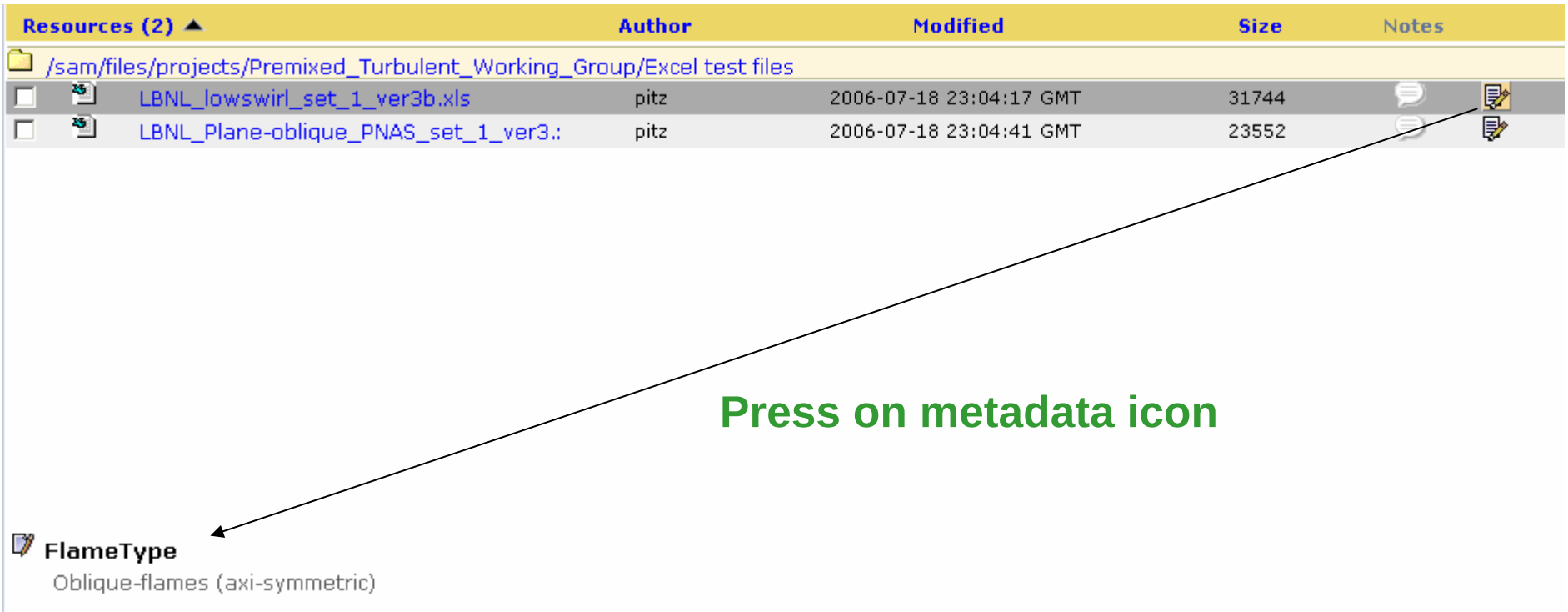
velo

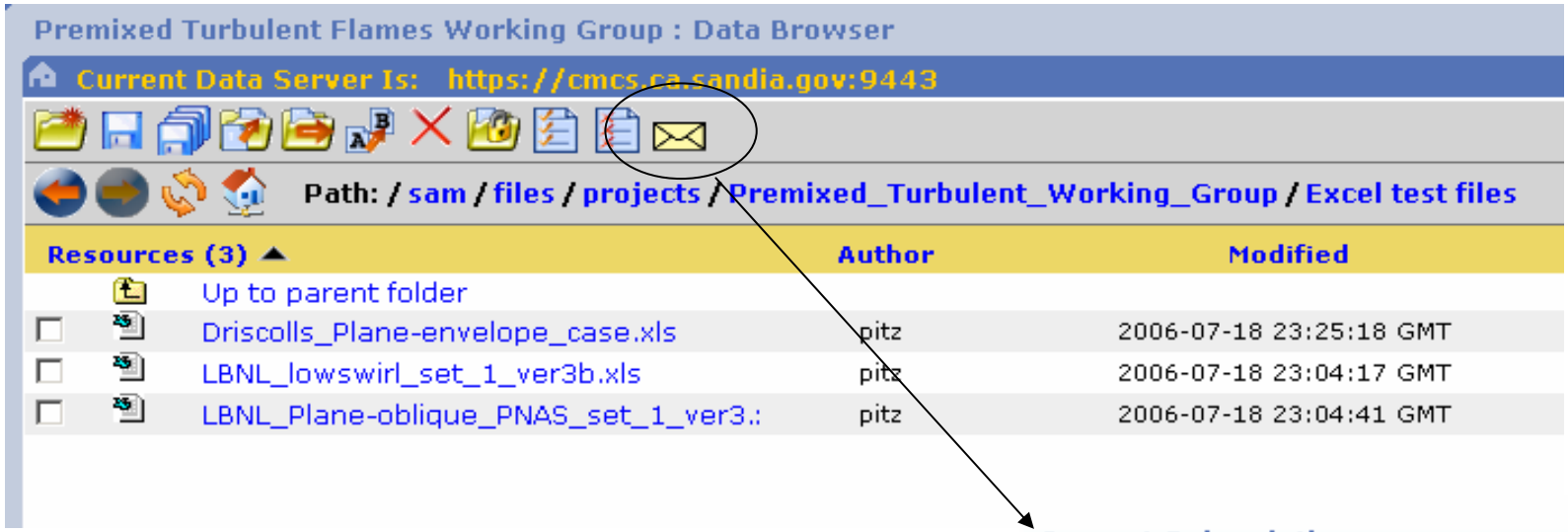
**Exact Match:** ☐ **Search Type:** AND ▾ Clear Close Search

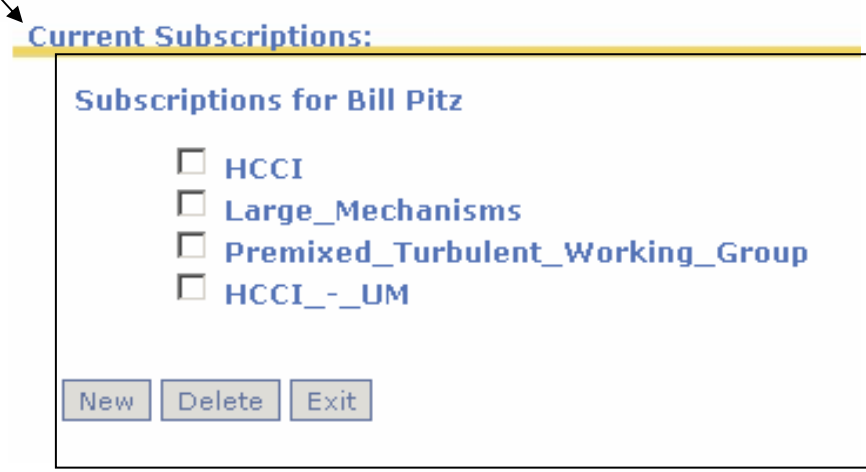
TION MIDDLEWARE Jetspeed

# Datasheets found



# Group members can be notified when new data is uploaded:




Email is sent when new data files are uploaded.

# Content of example notification email:

The following was **added** by Larry Rahn

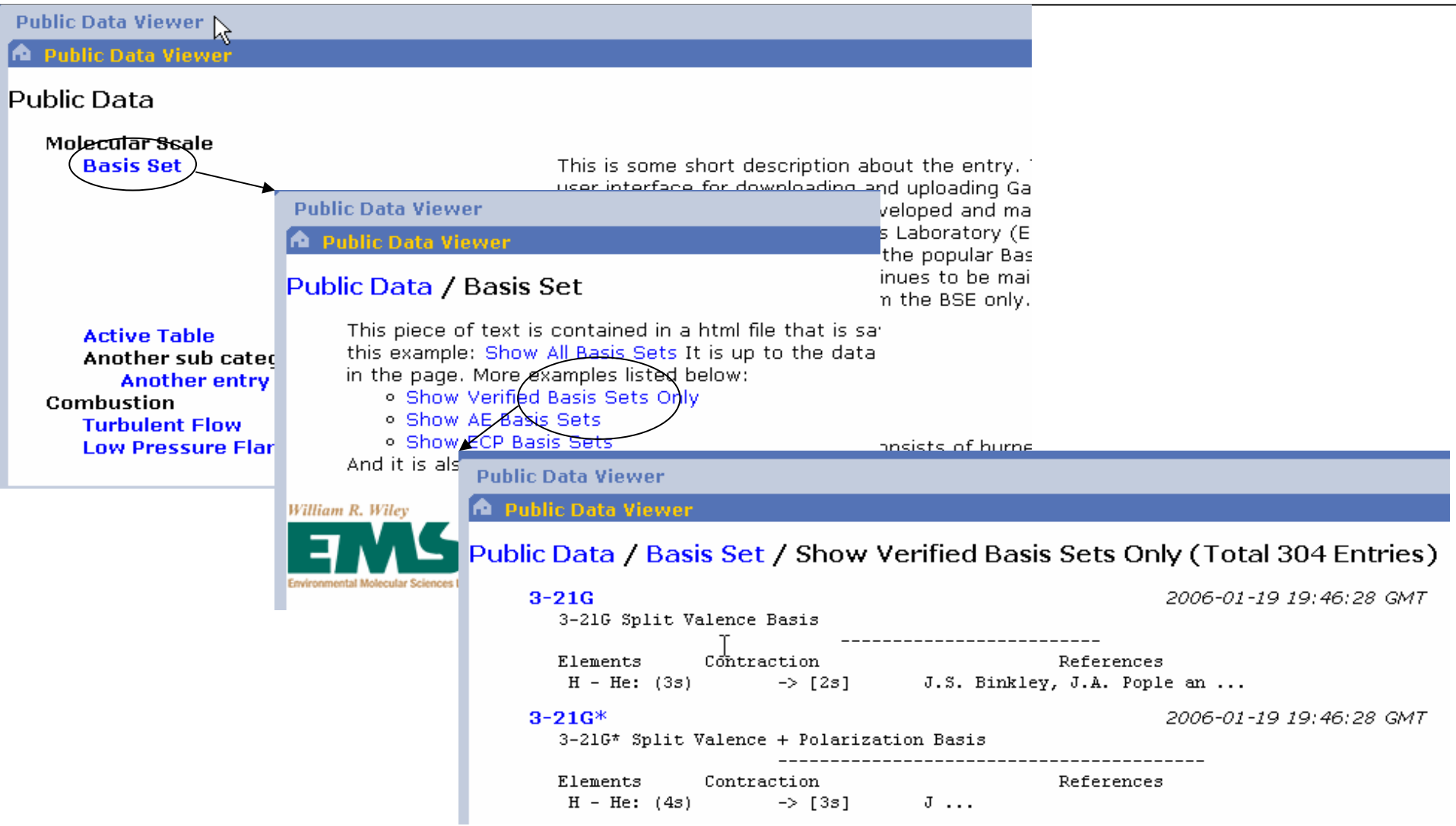
CMCS_FinalReport_2006_07_21CMP-CLYlar.doc

*Appears in:* https://cmcs.ca.sandia.gov:9443/sam/files/projects/CMCS_team/DOE Reports/Final Report and 2006 Accomplishments/

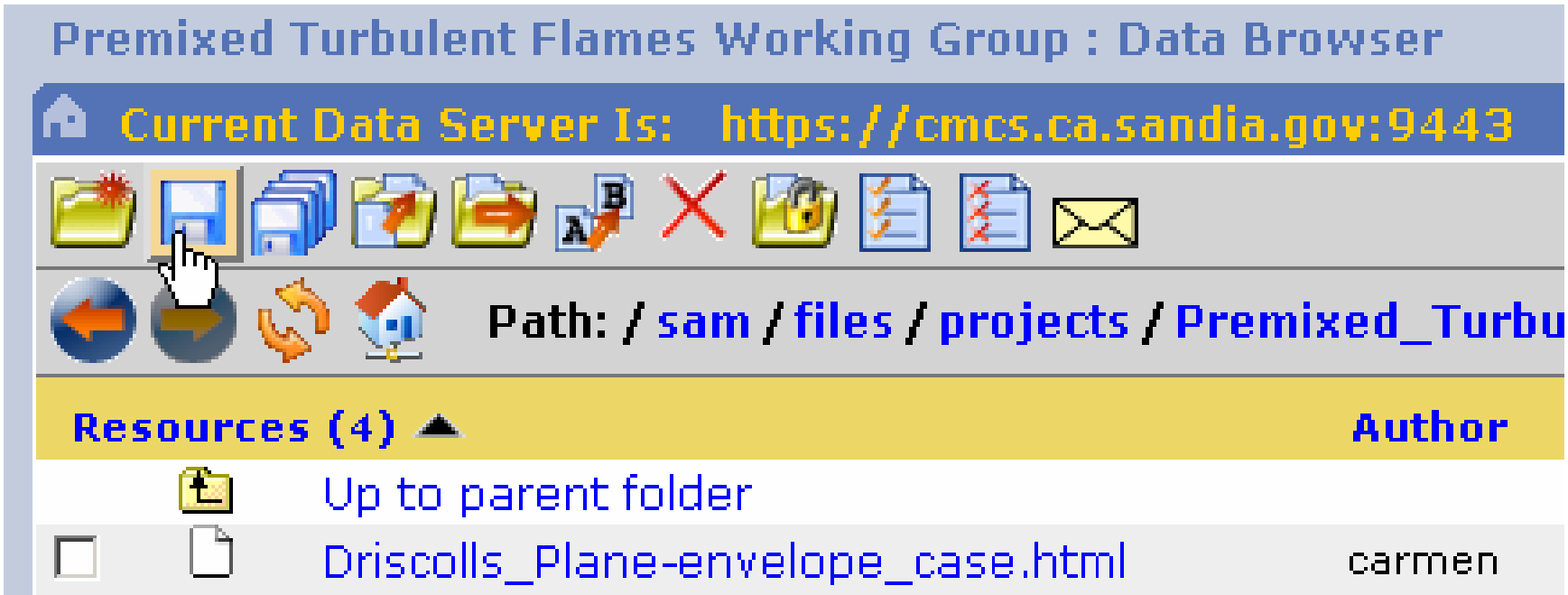
*Date:* Mon Jul 24 10:13:18 PDT 2006

This notification was generated by subscription " CMCS_team "

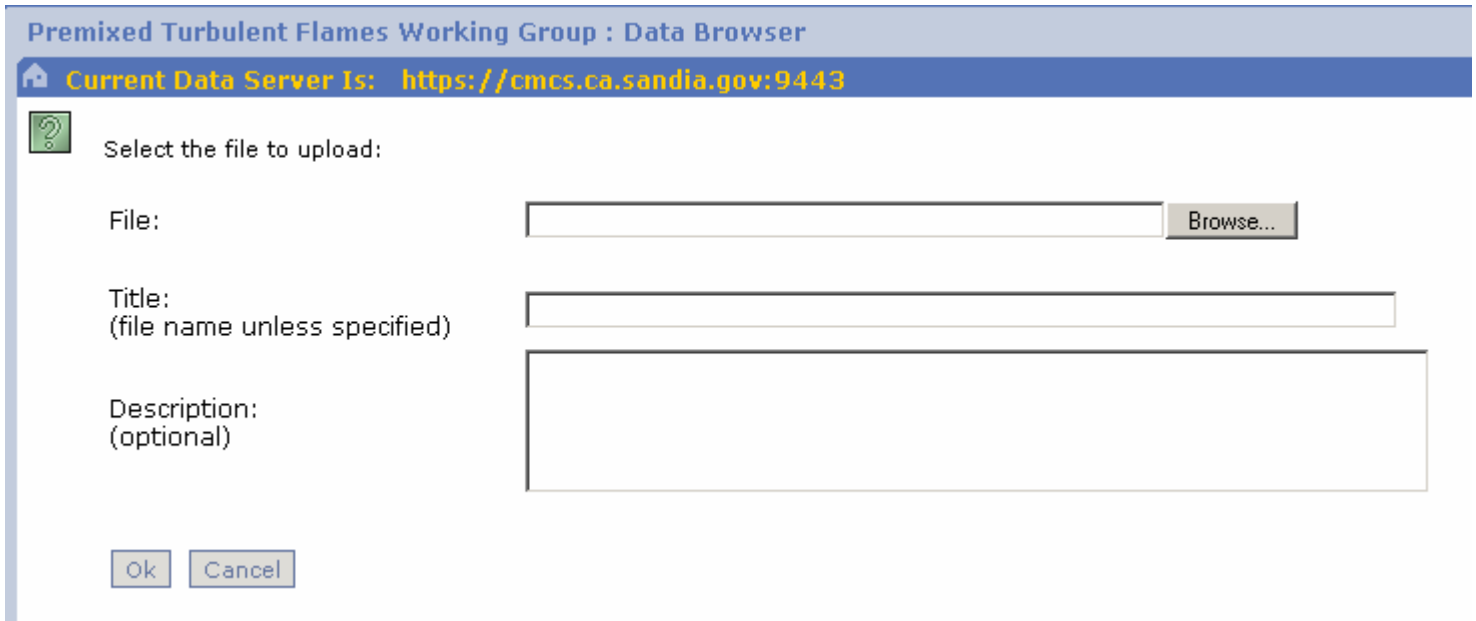
# CMCS allows groups to define customs views of their data: (example, Basis Set Exchange public data)



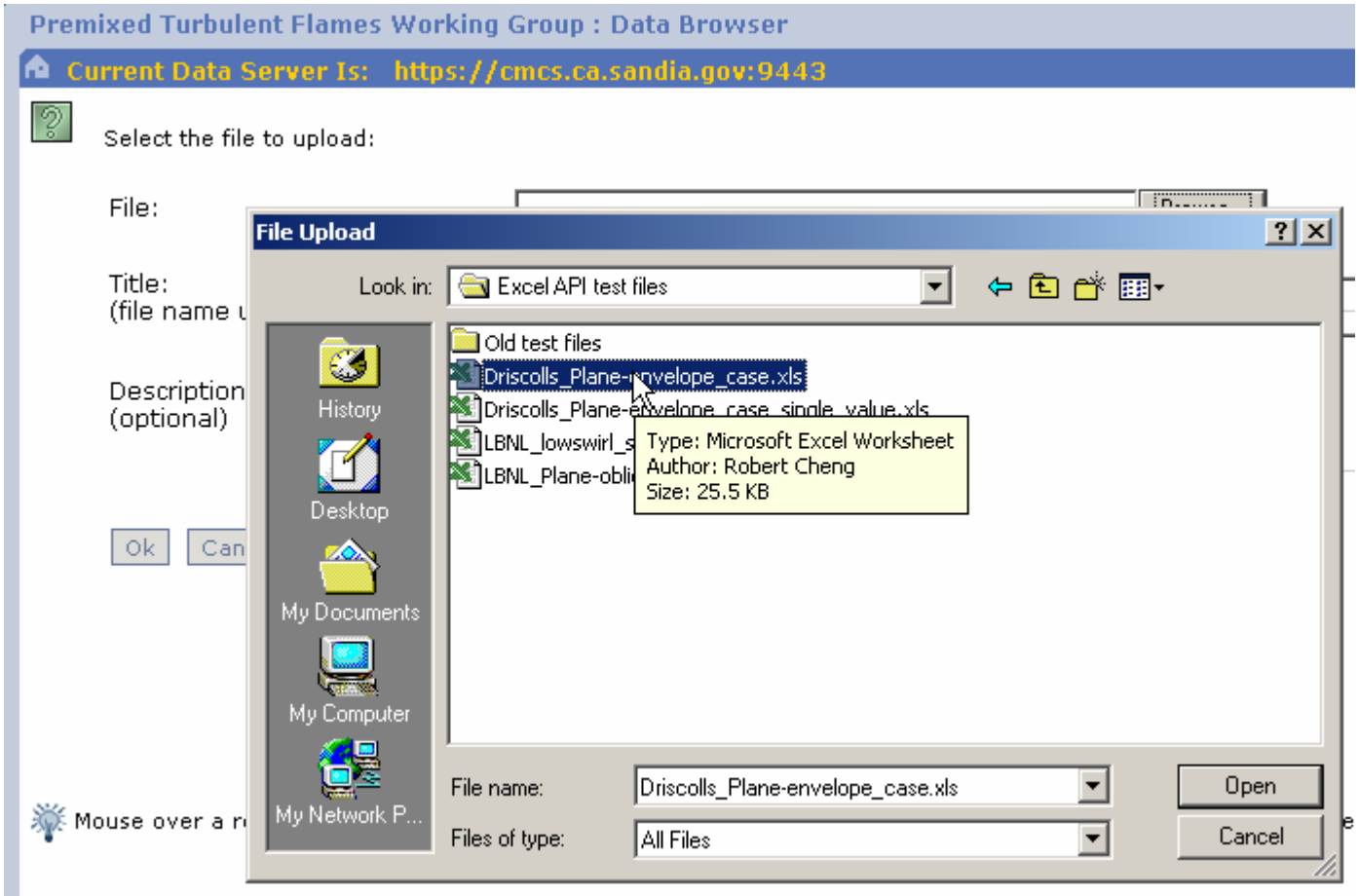
# To upload a file



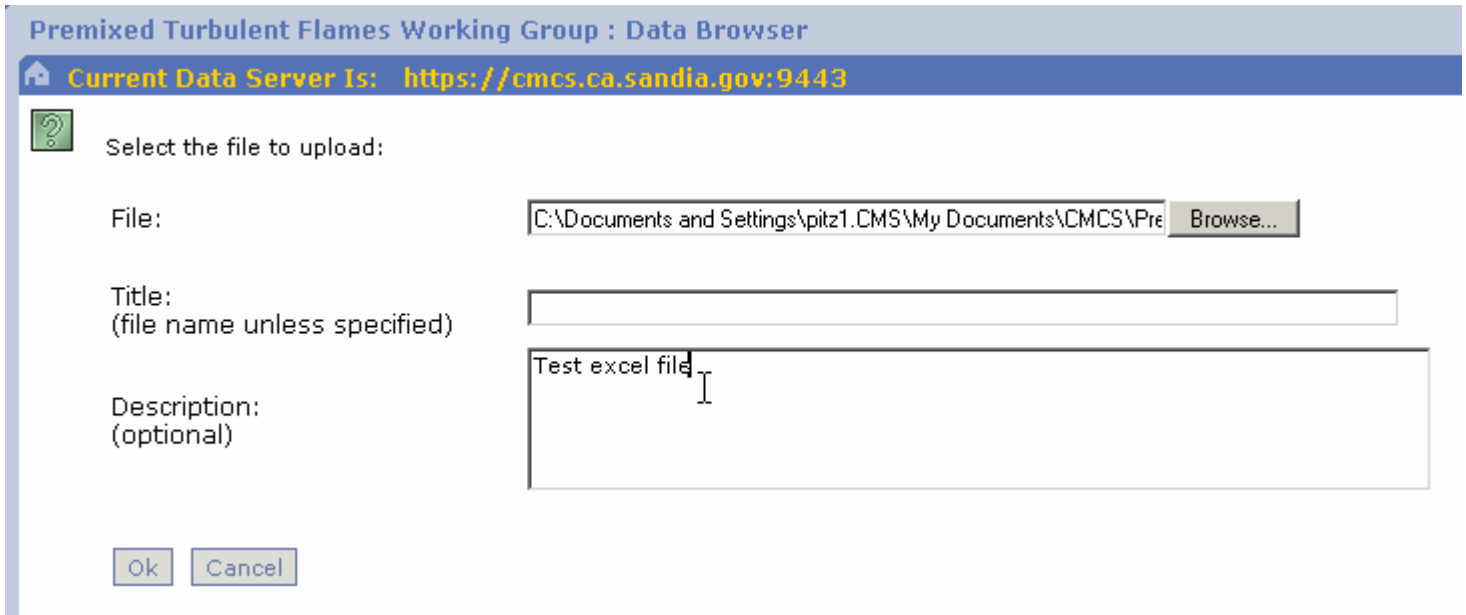
# To upload a file



# To upload a file



# To upload a file



# Acknowledgements to the members of the CMCS team who contributed to this effort:


- Jared Chase, PNNL
- Brett Didier, PNNL
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